

**World Ocean Circulation Experiment:
Support for the U.S. WOCE Office
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A Final Report
to
The Office of Naval Research
from
Texas A&M University

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1. Introduction

The U.S. WOCE Office (USWO) at Texas A&M University was established to carry out the necessary coordination both within the U.S. and between the U.S. and international partners to permit successful implementation of this multi-national project. It is funded by a number of federal funding agencies, including the National Science Foundation (NSF), the National Oceanic and Atmospheric Administration (NOAA), the Office of Naval Research (ONR), the National Aeronautic and Space Administration (NASA), the Department of Energy (DOE), and the Oceanographer of the Navy. This report covers activities of the USWO during the period 8.1.97-3.31.98.

2. Specific Responsibility of the U.S. WOCE Office

Specific responsibilities of the U.S. WOCE Office have been agreed between federal agencies and the Principal Investigator as follows:

- 1. Provide support for U.S. WOCE activities through:**
 - a. Preparing position papers and other documentation with respect to the efforts of the individual WOCE components and the panels and working groups of the Science Steering Committee (SSC).
 - b. Coordinating travel and meeting arrangements for scientists attending meetings of the panels and working groups mentioned above.
 - c. Compiling and maintaining records detailing the progress of the individual funded research projects that make up U.S. WOCE.
 - d. Coordinating between the individual research projects in the acquisition and use of shared facilities, and the distribution of information about and data obtained by WOCE field activities.
 - e. Coordinating and exchanging information with international WOCE partners.
 - f. Coordinating and exchanging information with other global change research programs.
 - g. Maintaining a public information program.
- 2. Provide support for the International Project Office for WOCE (IPO) through:**
 - a. Coordinating travel arrangements and providing financial support for U.S. participants in international WOCE panel and working group meetings.
 - b. Providing technical and managerial assistance through the financial support of consulting personnel and printing costs.
- 3. Provide additional support as shall from time-to-time be agreed between NSF and the Principal Investigator, when requested by the agency.**
- 4. Perform other tasks within the same general scope of work following community review and NSF approval of unsolicited proposals.**

3. Funding

During the period under review, the ONR provided \$20,000 to the USWO for the purpose of supporting travel of U.S. participants at WOCE-related meetings within the U.S.

4. Report for the period August 1997-March 1997

The tasks of the U.S. WOCE Office (USWO) can be summarised under the following seven headings:

Preparation of Position Papers and Other Documents

The USWO prepares position papers for the U.S. WOCE Science Steering Committee (SSC) and the U.S. WOCE Interagency Panel (IAP) to evaluate the progress of U.S. WOCE components, to define areas lacking adequate support, and to set priorities for future work. During the period under review, the USWO produced:

- A report on U.S. WOCE data availability.
- A report on a meeting in Dallas to discuss an Atlantic Climate Variability Experiment as part of CLIVAR.
- A report on a meeting in Miami to discuss an Pacific Basin Extended Climate Study as part of CLIVAR.
- An estimate of the field costs of the international WOCE program.
- Minutes of the WOCE SSC meeting in November, 1997.

One meeting of the SSC took place during this review period, in November 1997. The USWO made all the arrangements for this meeting and prepared the necessary documents. Additionally, office staff carried out many action items resulting from the above meetings.

Coordination of Meeting and Travel Arrangements

The USWO supports the travel expenses of U.S. scientists to domestic and international WOCE meetings and to other meetings in which WOCE has an interest. A list of scientists and USWO staff supported under this item is given in Appendix I. The USWO also makes arrangements for various meetings within the U.S. WOCE Meetings arranged by the USWO during this review period include the following:

- U.S. WOCE SSC Meeting (Pasadena, CA)
- Meeting of U.S. scientists to discuss a potential Pacific Basin Extended Climate Study as part of CLIVAR (Miami, FL)
- International WOCE Scientific Steering Group meeting (Boulder, CO)
- International WOCE Data Products Committee meeting (Honolulu, HI)
- Meeting of U.S. scientists to discuss a potential Atlantic Climate Variability Study as part of CLIVAR (Dallas, TX)

Maintenance of records of U.S. WOCE Proposals

The USWO coordinates the reviews of proposals submitted to NSF and NOAA for WOCE funding. These proposals are reviewed by the SSC for relevance and priority to WOCE. This activity continued during 1997, and results of the reviews were forwarded to the appropriate agencies.

The USWO maintains a data base of proposals submitted to agencies for U.S. WOCE funding. Information on active and completed proposals includes data on funding, progress reports, and published articles resulting from the research. Proposals not funded are removed from the active files and archived. The data base presently contains over 460 proposals. The USWO continued to work with the federal funding agencies to improve its information on WOCE proposals and to obtain information on proposals important to WOCE but funded through other programs.

Coordination Between Individual Research Projects Via Shared Facilities

The USWO continues to share information on U.S. WOCE research with the International Project Office (IPO) in the United Kingdom, the WOCE Data Information Unit at the University of Delaware, and individual Data Assembly Centers (DACs). Those in the U.S. function as national data management centers as well as the international centers for quality control of WOCE hydrographic, float, drifter, current meter, sea level, and upper ocean thermal data. Data exchange has been enhanced by the development of the USWO home page on the World-Wide Web, which is linked directly with many other WOCE sites. The individual DACs are presently preparing a series of CD-ROMs of available WOCE data which will be made available at the WOCE Conference to be held in Halifax, Canada, in May 1998. These will be updated as more data become available.

Coordination and Information Exchange with International WOCE Partners

Much of the international WOCE business is conducted during meetings of the international Scientific Steering Group (SSG) and its panels and working groups. During 1997-1998, the USWO supported the attendance at these meetings of U.S. scientists (Appendix I). Additionally, the USWO assisted with arrangements for international WOCE meetings conducted in the U.S. (see above). The USWO Director chaired the meeting of the international WOCE Hydrographic Programme Planning Committee (WHPPC) in Hamburg in October 1997 as well as attending all the meetings listed above.

Coordination and Information Exchange with Other Global Change Programs

USWO staff continue to communicate with scientists and agency personnel involved in other global change programs to coordinate research of mutual interest. During 1996/97, the USWO has been active in support of CLIVAR planning, hosting meetings on this topic and preparing documentation (see above).

Maintenance of a Public Information Program

Documents published by the USWO since August 1997 are listed in Appendix II. Production of the newsletter, *WOCE Notes*, and use of the USWO home page on the World-Wide Web help ensure that scientists, agency managers, and the public are informed of U.S. WOCE activities. These avenues were used to publicize agency program announcements, research priorities established by the SSC, results of WOCE research, and the U.S. WOCE bibliography and calendar. Additionally, the 1995, 1996 and 1997 WOCE Reports are now available through this medium.

5. International WOCE Office (Southampton, U.K.)

The USWO has continued its support of the IPO (situated at the Southampton Oceanography Centre, England) both by providing travel support for U.S. members on international WOCE panels and by supporting office staff (Appendix I). Additionally, the USWO provided assistance with arrangements for meetings of international panels conducted in the U.S.; during the review period these comprised the meetings of the international WOCE Scientific Steering Group and the Data Products Committee.

The consultant (Dr. Peter Saunders) continued to work with the IPO on specific issues connected with modeling and synthesis. The Consultant has the responsibility of advising the Chairman of the SSC and the WOCE IPO Director on:

- (i) the status of development and testing of global ocean models required for climate prediction, with specific emphasis on basin- and global-scale models that use data collected during WOCE;
- (ii) appropriate data products that should be produced by the WOCE Special Analysis Centers;
- (iii) the status of the development, testing, assembly and production of integrated data products from both the WOCE Special Analysis Centers and the general scientific community;
- (iv) progress being made within other global oceanographic and atmospheric programs that may impact modeling and data analysis undertaken through WOCE; and
- (v) the status of publications detailing research carried out with WOCE support.

As consultant, Dr. Saunders attends about five WOCE meetings per year and prepares (on average) one or two papers for each, including summary reports of other meetings and position papers. During the 1997/98 period under review, he attended the meetings of the U.S. WOCE SSC and the international WOCE WHP and DPC, making presentations at each on the above topics and assisting with the final report writing. In addition, he visited the WOCE Hydrographic Programme Office at Scripps Institution of Oceanography with the Chair of the WHPPC, Dr. Chapman, to discuss progress since the office's move from Woods Hole earlier in the year. He assisted with the preparation of the WOCE plan for Analysis, Interpretation, Modeling and Synthesis (AIMS; publication 153/97) and a WOCE Brochure (154/97) published prior to the WCRP Conference in August 1997. Additionally, he has prepared information for presentations on WOCE by others, manages the WOCE bibliography, and authored scientific papers on WOCE results.

**Appendix I - Meeting attendees supported by USWO during the period
8/97-3/98**

WCRP Conference (Geneva, Switzerland, 8/97)
Owens

NSF Modeling Meeting (Community Requirements) (Arlington, VA, 9/97)
Nowlin, Davis, Ducklow, Haidvogel, Hoffmann, Powell, Roman, Wallace

Pacific BECS meeting (Miami, FL, 9/97)
Chapman, Chelton, Davis, Fine, Fu, Lukas, Niiler, Roemmich, Schmitt, Stammer, White

International WOCE SSG (Boulder, CO, 9/97)
Chapman, Jenkins, Legler, Owens, Roemmich

U.S. WOCE SSC (Pasadena, CA, 10/97)
Nowlin, Bennett, Chapman, Doney, Fine, Haidvogel, Hill, Johnson, Large, Owens, Reap, Riser, Schlosser

International WOCE Hydrographic Programme Planning Committee (Hamburg, Germany, 10/97)
Chapman

International WOCE Data Products Committee (Honolulu, HI, 1/98)
Chapman, Johnson, McWilliams, Semtner, Warner

Atlantic ACVE meeting (Dallas, TX, 2/98)
Battisti, Busalacchi, Carton, Chang, Chapman, Deser, Esbensen, Hogg, Huang, Hurrell, Johns, Kushnir, Large, Lozier, Marshall, McCartney, McCreary, Mechoso, Niiler, Owens, Rhines, Robinson, Rossby, Saravanan, Spall, Stammer, Toole, Visbeck, Walsh, Wunsch, Zebiak

Ocean Sciences meeting (San Diego, CA, 2/98)
Chapman, Di Marco, Nowlin

IGBP SSC (Boulder, CO, 2/98)
Nowlin

GOOS Implementation Strategy Workshop (Sydney, Australia, 3/98)
Nowlin

ACCE PI meeting (Miami, FL, 3/98)
Chapman

Appendix II - Publications of U.S. WOCE Office during the period

WOCE Notes 9(2), October 1997, 16 pp.
10(1), March 1998, 24 pp.

Minutes of the U.S. WOCE SSC meeting, September 1997

Report on Data Availability, September 1997

Report on Miami BECS meeting, September 1997

Report on Dallas ACVE meeting, February 1998

Estimate of field costs of international WOCE, March 1998

Other papers published or given at conferences by Director and Dr W.D. Nowlin, Jr

Chapman, P. 1998. The WOCE data resource. Bull. Amer. Meteor. Soc (in press).

Di Marco, S.M., Nowlin, W.D. Jr. and Chapman, P. 1998. Estimates of volume transport through the Mozambique Channel based on hydrographic data. EOS 79(1) Supplement, OS21J-4.

Nowlin, W.D., Jr. 1997. U.S. Ocean Science needs for modeling and data synthesis: status of a community assessment. Oceanography, 10, 135-140.

Nowlin, W.D., Kosro, M. and Warren, B.A. 1998. Preliminary observations of the Leeuwin Current at 20°S. EOS 79(1) Supplement, OS21J-1.

Smythe-Wright, D., Chapman, P., Duncombe Rae, C., Shannon, L.V. and Boswell, S. M. 1998. Characteristics of the South Atlantic Subtropical Front between 15°W and 5°E. Deep-Sea Research (in press).